AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application:

1.   (Currently Amended) For use with a broadcast ~~digital television (DTV)~~ system operable to carry digital~~output a packet multiplex including video~~ packets to multiple recipients simultaneously, ~~and audio packets representing core television content for which said system is principally licensed, said system including a mixing unit to combine the core content with non-core content, the mixing unit including at least one of an IP to MPEG gateway and a multiplexer,~~ a ~~non-core~~ content liaison unit comprising:

a content provider (CP) interface to receive, ~~in a machine readable form~~ from a content provider unit, a specification of digital content~~non-core content~~ that is to be inserted into said broadcast system~~packet multiplex~~ and an insertion schedule by which said digital~~non-core~~ content is to be inserted into said broadcast system~~packet multiplex~~, wherein said digital content pertains to data broadcasting;

a collection unit, responsive to said CP interface, to collect digital files of said digital~~non-core~~ content by at least one of actively retrieving and reactively receiving said digital files~~non-core content~~ from a source thereof identified in said specification; and

an insertion~~transfer~~ unit, responsive to said CP interface, to transfer said ~~non-core content~~ digital files from said collection unit to said broadcast system ~~mixing unit~~ according to said insertion schedule.

2.   (Currently Amended) The liaison unit of claim 1, wherein said collection unit includes memory into which said collection unit is operable to store said ~~non-core content~~ digital files so as to decouple, in time, the collection and the transfer of said digital files ~~non-core content~~.

3.   (Currently Amended) The liaison unit of claim 1, wherein:

said content provider unit is a first content provider unit, ~~said machine readable form is a first machine readable form,~~ said specification is a first specification and said insertion schedule is a first insertion schedule;

said CP interface also is operable to receive, ~~in a second machine readable form~~ from a second content provider unit, a second specification of ~~non-core~~ second digital content that is to be inserted into said ~~packet multiplex~~ broadcast system and a second insertion schedule by which said ~~non-core content~~ second digital content is to be inserted into said ~~packet multiplex~~ broadcast system;

said collection unit also is operable to collect said second ~~non-core~~ digital content by at least one of actively retrieving and reactively receiving said second ~~non-core content~~ digital content from a source thereof identified in said second specification;

said ~~transfer~~ insertion unit also being operable to transfer said second ~~non-core~~ digital content from said collection unit to said broadcasting system ~~mixing unit~~ according to said second insertion schedule.

4.   (Currently Amended) The liaison interface of claim 3, wherein ~~each of said first machine-readable form and said second machine-readable form is compliant with~~ said first specification, said first insertion schedule, said second specification and said second insertion schedule are provided to said CP interface using a common communications protocol.

5.   (Currently Amended) The liaison unit of claim 1, wherein said specification includes at least one of the following:

a characterization of the type of said ~~non-core~~ digital content;

a resource locator to define a location where said ~~non-core~~ digital content can be obtained by said liaison ~~broadcaster~~ unit;

a transfer schedule by which said liaison ~~broadcaster~~ unit is to obtain said ~~non-core~~ digital content;

an indication of whether said liaison ~~broadcaster~~ unit will actively retrieve or responsively receive said ~~non-core~~ digital content from a source of said ~~non-core~~ digital content;

an indication of whether said ~~non-core~~ digital content is to be compressed by said content provider unit or by said liaison unit;

an indication of whether said ~~non-core~~ digital content is to be encrypted by said content provider unit or by said liaison unit; and

an indication of whether said ~~non-core~~ digital content is to undergo forward error correction transformations by said content provider unit or by said liaison unit.

6.   (Currently Amended) The liaison unit of claim 5, wherein said transfer schedule includes a first set of at least one time for said ~~non-core~~ digital content to be collected and a second set of at least one time for said ~~non-core~~ digital content to be transferred, said second set being different than said first set.

7.   (Currently Amended) The liaison unit of claim 1, wherein said liaison unit is sufficiently robust to interpret a valid insertion schedule whenever said insertion schedule is defined in terms of each of the following scheduling parameters taken alone or in combination:

a start time of a time slot during which an item can be output from said ~~mixing unit~~ liaison unit to said broadcast system;

an end time for said time slot;

a duration (D) of said time slot;

a time interval (INT) between successive outputs of said item from said ~~mixing unit~~ liaison unit to said broadcast system during said time slot;

a number (N) of times that said item is to be output from said ~~mixing unit~~ liaison unit to said broadcast system during said ~~a~~ time slot;

a size (S) of said item; and

a bitrate (BTR) at which said item is to be output from said ~~mixing unit~~ liaison unit to said broadcast system during said time slot.

8.   (Currently Amended) The liaison ~~non core content provider~~ unit of claim 7, wherein said insertion schedule is a microschedule;

wherein said CP interface is operable to receive a macroschedule including at least one recurring time slot, each recurring slot having a microschedule, respectively; and

wherein said ~~transfer~~ insertion unit is responsive to said macroschedule.

9.   (Original) The liaison unit of claim 7, wherein, if two or more of said scheduling parameters are contradictory, then said liaison unit is operable to apply at least one conflict resolution rule to ignore at least one of the contradictory scheduling parameters in order to interpret said insertion schedule to be valid.

10. (Original) The liaison unit of claim 9, wherein said at least one conflict resolution rule includes at least one of the rules from the following Rule Table:

Rule Table

Parameters Specified				Rule
INT	BTR	D	N	
Y	Y	Y	Y	If INT < S/BTR, set INT = S/BTR Ignore N, Output at INT using BTR, for D (timed),
Y	Y	Y	N	If INT < S/BTR, set INT = S/BTR Output at INT using BTR, for D (timed),
Y	Y	N	Y	If INT < S/BTR, set INT = S/BTR Output at INT using BTR, N times (timed),
Y	Y	N	N	If INT < S/BTR, set INT = S/BTR Output at INT using BTR, indefinitely (timed),
Y	N	Y	Y	Set BTR = account BTR, If INT < S/BTR, set INT = S/BTR Ignore N, Output at INT using BTR, for D (timed),
Y	N	Y	N	Set BTR = account BTR, If INT < S/BTR, set INT = S/BTR Output at INT using BTR, for D (timed),
Y	N	N	Y	Set BTR = account BTR, If INT < S/BTR, set INT = S/BTR Output at INT using BTR, N times (timed),
Y	N	N	N	Set BTR = account BTR, If INT < S/BTR, set INT = S/BTR Output at INT using BTR, indefinitely (timed),
N	Y	Y	Y	Set INT = D/N, If INT < S/BTR, set INT = S/BTR Output at INT using BTR, for D (timed),
N	Y	Y	N	Set INT = S/BTR, Output at INT using BTR, for D (timed),

Parameters Specified				Rule
INT	BTR	D	N	
N	Y	N	Y	Set INT = S/BTR, Output at INT using BTR, N times (timed),
N	Y	N	N	Set INT = S/BTR, Output at INT using BTR, indefinitely (timed),
N	N	Y	Y	Set BTR = account BTR, Set INT = D/N, If INT < S/BTR, set INT = S/BTR Output at INT using BTR, for D,
N	N	Y	N	Output for D (non-timed),
N	N	N	Y	Output N times (non-timed),
N	N	N	N	Output indefinitely (non-timed).

11. (Currently Amended) The liaison unit of claim 1, wherein said ~~machine readable form includes representation of~~ CP interface receives said specification and said insertion schedule represented as at least one XML document from said content provider unit.

12. (Currently Amended) The liaison unit of claim 1, wherein: said specification includes at least one ~~of each of the following data structures: an~~ account, ~~; a catalog; a group of related items; and an independent item;~~

~~wherein said data structures are organized according to the following hierarchy:~~

~~an account at the top of said hierarchy;~~ each account including at least one catalog;, each catalog including at least one ~~of an~~ independent item to be output by said ~~mixing unit~~ liaison unit to said broadcast system ~~and a~~ or at least one group of related items to be output by said ~~mixing unit~~ liaison unit to said broadcast system,~~; and~~ each group including ~~at least two of the following:~~ at least one group of related items ~~and~~ or at least one ~~an~~ independent item.

13.   (Cancelled)

14.   (Currently Amended) The liaison unit of claim 1, wherein:

said specification and insertion schedule are associated with an account; and

said ~~transfer~~ _insertion_ unit is operable to limit ~~the~~ _an_ insertion-schedule-dictated transference of said ~~non-core~~ _digital_ content so as to comply with a bandwidth allocation for said account.

15.   (Currently Amended) The liaison unit of claim 14,

wherein said ~~transfer~~ _insertion_ unit limits said transference by processing said insertion schedule as a plurality of incremental time slices, said bandwidth allocation representing a maximum data amount of data that can be transferred in each time slice, respectively; and

wherein, if transference of said maximum amount of data takes place before the end of a time slice, then said ~~transfer~~ _insertion_ unit is operable to suspend the transference until a next time slice begins.

16.   (Currently Amended) For use with a ~~digital television (DTV)~~ _broadcast_ system operable to _carry digital packets to multiple recipients simultaneously, a content provider unit comprising:_ ~~output a packet multiplex including video packets and audio packets representing core television content for which said system is principally licensed, said system including a mixing unit to combine the core content with non-core content, the mixing unit including at least one of an IP-to-MPEG gateway and a multiplexer,~~

~~a non-core content provider unit comprising:~~

an insertion schedule generator to generate <u>a specification of digital content to be inserted into said broadcast system and</u> an insertion schedule <u>by which</u> said digital content is to be inserted, wherein said digital content pertains to data broadcasting; and

an interface to <u>a liaison unit</u> ~~said DTV system~~ to provide, in a machine-readable form, a <u>said</u> specification of ~~non-core~~ <u>said digital</u> content that is to be inserted into said ~~packet multiplex~~ <u>broadcast system</u> and ~~an~~ <u>said</u> insertion schedule by which said ~~non-core~~ <u>digital</u> content is to be inserted into said <u>broadcast system.</u>~~packet multiplex.~~

17.   (Currently Amended) The ~~non-core~~ content provider unit of claim 16, further comprising a source of said ~~non-core~~ <u>digital</u> content.

18.   (Currently Amended) The ~~non-core~~ content provider unit of claim 16, wherein

said ~~DTV~~ <u>broadcast</u> system is a first ~~DTV~~ <u>broadcast</u> system, said machine-readable form is a first machine-readable form, said specification is a first specification, ~~said packet multiplex is a first packet multiplex~~ and said insertion schedule is a first insertion schedule; and

said ~~non-core~~ content provider unit is operable <u>to</u> provide to a second ~~DTV system~~ <u>liasion unit</u>, in a second machine-readable form, a second specification of second ~~non-core~~ <u>digital</u> content that is to be inserted into <u>a second broadcast system</u>~~a second packet multiplex~~ and a second insertion schedule by which said second ~~non-core~~ <u>digital</u> content is to be inserted into said <u>broadcast system.</u> ~~second packet multiplex.~~

19.   (Currently Amended) The ~~liaison interface~~ <u>content provider unit</u> of claim 18, wherein each of said first machine-readable form and said second machine-readable form is compliant with a common protocol.

20.   (Currently Amended)   The ~~liaison unit~~ content provider unit of claim 16, wherein said specification includes at least one of the following:

a characterization of the type of said ~~non-core~~ digital content;

a resource locator to define a location where said ~~non-core~~ digital content can be obtained by ~~said~~ a broadcaster unit;

a transfer schedule by which said broadcaster unit is to obtain said ~~non-core~~ digital content;

an indication of whether said broadcaster unit will actively retrieve or responsively receive said ~~non-core~~ digital content from a source of said ~~non-core~~ digital content;

an indication of whether said ~~non-core~~ digital content is to be compressed by said ~~a~~ content provider unit or by said liaison unit;

an indication of whether said ~~non-core~~ digital content is to be encrypted by said content provider unit or by said liaison unit; and

an indication of whether said ~~non-core~~ digital content is to undergo forward error correction transformations by said content provider unit or by said liaison unit.

21.   (Cancelled)

22.   (Currently Amended)   The ~~non-core~~ content provider unit of claim 16, wherein

said machine-readable form is a first machine-readable form, and said specification is a first specification and said insertion schedule is a first insertion schedule, said first specification and

said first insertion schedule corresponding to a first account maintained by said ~~non-core~~ digital content provider unit, said first account being bounded by a first bandwidth allocation; and

said ~~non-core~~ content provider unit is operable to provide, to said ~~DTV~~ broadcast system in a second machine-readable form, a second specification of second ~~non-core~~ digital content that is to be inserted into said ~~packet multiplex~~ broadcast system and a second insertion schedule by which said second ~~non-core~~ digital content is to be inserted into said ~~packet multiplex~~ broadcast system, said second specification and said second insertion schedule corresponding to a second account maintained by said ~~non-core~~ content provider unit, said second account being bounded by a second bandwidth allocation different than said first bandwidth allocation.

23.   (Currently Amended)   The ~~non-core~~ content provider unit of claim 16, wherein said insertion schedule generator is sufficiently robust to generate a valid insertion schedule in terms of each of the following scheduling parameters taken alone or in combination:

a start time of a time slot during which an item can be output from said ~~mixing unit~~ liaison unit to said broadcast system;

an end time for said time slot;

a duration of said time slot;

a time interval between successive outputs of said item from said ~~mixing unit~~ liaison unit to said broadcast system during said time slot;

a number of times that said item is to be output from said ~~mixing unit~~ liaison unit to said broadcast system during said ~~a~~ time slot;

a size of said item; and

a bitrate at which said item is to be output from said ~~mixing unit~~ liaison unit to said broadcast system during said time slot.

24.   (Currently Amended)   The ~~non-core~~ content provider unit of claim 23, wherein said insertion schedule is a microschedule, and

wherein said insertion schedule generator is operable to provide a macroschedule including at least one recurring time slot, each recurring slot having a microschedule, respectively.

25.   (Currently Amended)   The ~~non-core~~ content provider unit of claim 16, wherein said machine readable form includes representation of said specification and said insertion schedule as at least one XML document.

26.   (Currently Amended)   The ~~non-core~~ content provider unit of claim 16, wherein: said specification includes at least one ~~of each of the following data structures: an~~ account, ~~; a catalog; a group of related items; and an independent item;~~

~~wherein said data structures are organized according to the following hierarchy:~~

~~an account at the top of said hierarchy;~~ each account including at least one catalog, each catalog including at least one ~~of an~~ independent item to be output by said ~~mixing unit~~ liaison unit to said broadcast system ~~and a~~ or at least one group of related items to be output by said ~~mixing unit~~ liaison unit to said broadcast system, ~~and~~ each group including ~~at least two~~ ~~of the following:~~ at least one group of related items ~~and~~ or at least one ~~an~~ independent item.

Claims 27 – 34 (Cancelled).

35.   (Currently Amended) A method as embodied in elements which form the ~~non-core~~ content liaison unit of claim 1.

36.   (Currently Amended) A computer-readable medium having embodied thereon a̶ at least one program to cause a̶ at least one processor to implement the ~~non-core~~ content liaison unit of claim 1.

37.   (Currently Amended) A method as embodied in elements which form the ~~non-core~~ content provider unit of claim 1<u>6</u>.

38.   (Currently Amended) A computer-readable medium having embodied thereon a̶ at least one program to cause a̶ at least one processor to implement the ~~non-core~~ content provider unit of claim 16.

Claims 39 – 43 (Cancelled).

44. (New) A data broadcast system for use with a broadcast system operable to carry digital packets to multiple recipients simultaneously, the data broadcast system comprising:

a content provider unit to generate a specification of digital content and an insertion schedule by which the digital content is to be inserted into a broadcast signal, wherein the digital content pertains to data broadcasting; and

a content liaison unit to communicate with the content provider unit over a communications network, to receive the specification of digital content and the insertion schedule from the content provider unit over the communications network, and to insert the digital content into the broadcast signal according to the insertion schedule.

45. (New) The data broadcast system of claim 44, wherein the broadcast signal into which the digital content is inserted contains therein video and/or audio program content.

46. (New) The data broadcast system of claim 44, wherein the content provider unit and the content liaison unit negotiate with each other over the communications network to allocate a bandwidth for the digital content specified by the content provider unit.

47. (New) The data broadcast system of claim 44, further comprising:

at least one receiver device to receive the broadcast signal including the digital content and to extract data from the received broadcast signal.